

Section II **THEY SUGGEST 20 MIN PER QUESTION**

78 marks  
Attempt Questions 23–28  
Allow about 2 hours for this section

Answer each question in the appropriate writing booklet. Extra writing booklets are available.  
All necessary working should be shown in every question.

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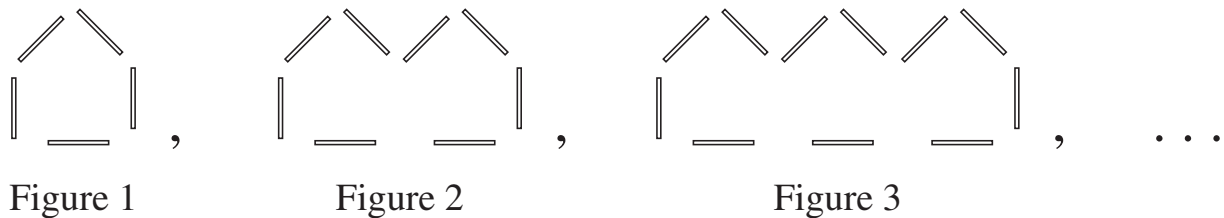
**Question 23** (13 marks) Use the Question 23 Writing Booklet.

- (a) Sri has a gross salary of \$56 350. She has tax deductions of \$350 for union fees, **3**  
\$2000 in work-related expenses and \$250 in donations to charities.

The Medicare levy is 1.5% of her taxable income.

Calculate Sri’s Medicare levy.

- (b) Sticks were used to create the following pattern.



The number of sticks used is recorded in the table.

Figure ( $F$ )	1	2	3
Number of sticks ( $N$ )	5	8	11

- (i) Draw Figure 4 of this pattern. **1**
- (ii) How many sticks would be required for Figure 100? **1**
- (iii) Is it possible to create a figure in this pattern using exactly 543 sticks? **2**
- Show suitable calculations to support your answer.

**Question 23 continues on page 13**

Question 23 (continued)

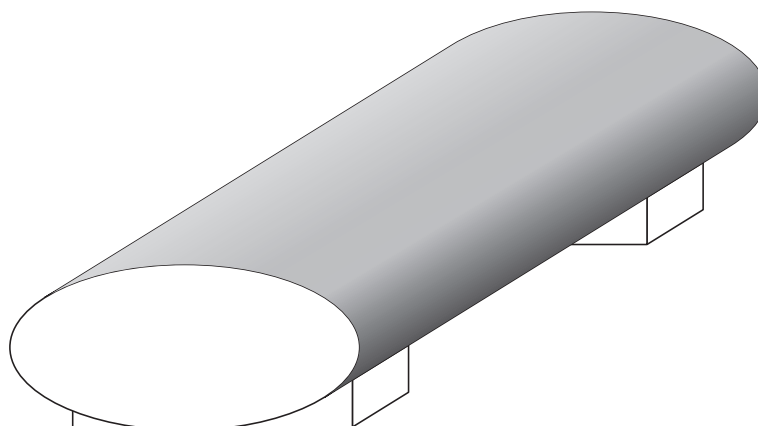
- (c) An amount of \$5000 is invested at 10% per annum, compounded six-monthly. 2

**Compounded values of \$1**

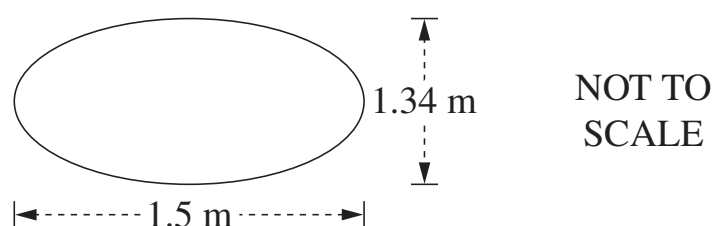
Period	Interest rate per period				
	1%	5%	10%	15%	20%
1	1.010	1.050	1.100	1.150	1.200
2	1.020	1.103	1.210	1.323	1.440
3	1.030	1.158	1.331	1.521	1.728
4	1.041	1.216	1.464	1.750	2.074
5	1.051	1.276	1.611	2.011	2.488
6	1.062	1.340	1.772	2.313	2.986

Use the table to find the value of this investment at the end of three years.

- (d) Aviation fuel is stored in a tank. The cross-section of the tank is an ellipse. 1



- (i) The tank holds 10 000 litres of fuel. What is the volume of the tank in cubic metres? ( $1 \text{ m}^3 = 1000 \text{ L}$ ) 1
- (ii) The cross-section of the tank has the dimensions shown. 3

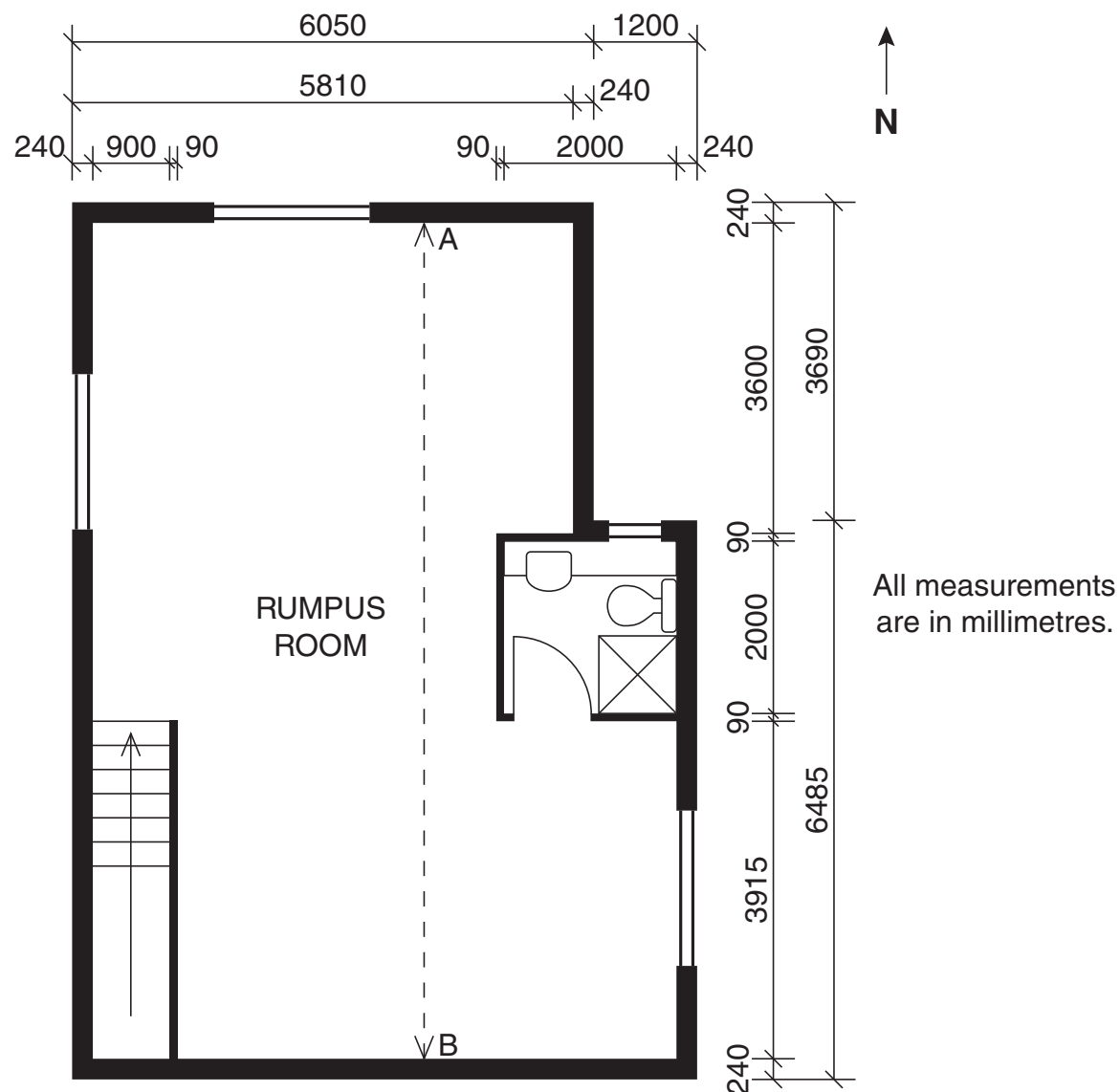


What is the length of the tank? Give your answer correct to the nearest centimetre.

**End of Question 23**

**Question 24** (13 marks) Use the Question 24 Writing Booklet.

- (a) Part of the floor plan of a house is shown. The plan is drawn to scale.



- |   |          |
|---|----------|
| (i) What is the width of the stairwell, in millimetres?   | <b>1</b> |
| (ii) What are the internal dimensions of the bathroom, in millimetres?  | <b>1</b> |
| (iii) What is the length AB, the internal length of the rumpus room, in millimetres?  | <b>1</b> |
| (iv) There are three identical windows to be purchased for this rumpus room. Use the floor plan to determine the width of the windows to be purchased. Give your answer in millimetres. | <b>1</b> |

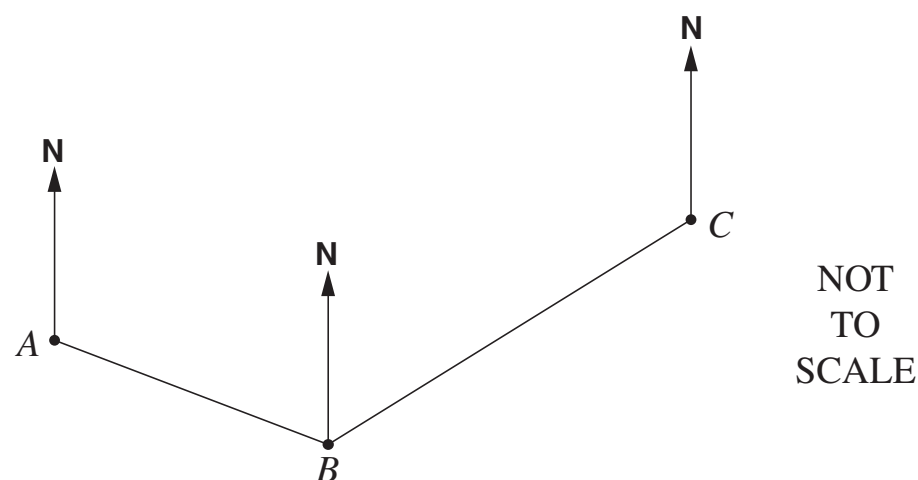
**Question 24 continues on page 15**

Question 24 (continued)

- (b) A die was rolled 72 times. The results for this experiment are shown in the table.

<i>Number obtained</i>	<i>Frequency</i>
1	16
2	11
3	<b>A</b>
4	8
5	12
6	15

- (i) Find the value of **A**. **1**
- (ii) What was the relative frequency of obtaining a 4? **1**
- (iii) If the die was unbiased, which number was obtained the expected number of times? **1**
- (c) A ship sails 6 km from *A* to *B* on a bearing of  $121^\circ$ . It then sails 9 km to *C*. The size of angle *ABC* is  $114^\circ$ .



Copy the diagram into your writing booklet and show all the information on it.

- (i) What is the bearing of *C* from *B*? **1**
- (ii) Find the distance *AC*. Give your answer correct to the nearest kilometre. **2**
- (iii) What is the bearing of *A* from *C*? Give your answer correct to the nearest degree. **3**

**End of Question 24**